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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MURPHY, RHONDA L

ART UNIT

PAPER NUMBER

2462

NOTIFICATION DATE

DELIVERY MODE

10/07/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

lhptoms@leehayes.com

Office Action Summary	Application No. 10/686,160	Applicant(s) RUI ET AL.	
	Examiner RHONDA MURPHY	Art Unit 2462	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) |
| 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) ☐ Information Disclosure Statement(s) (PTO/SB/08) | 5) ☐ Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) ☐ Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 1-5,8,14-16,18,19,21,23,25-29,32,38-40,42,44,46,48-50,52,56,58-65,67,71,73-80,82 and 88-91.

Continuation of Disposition of Claims: Claims rejected are 1-5,8,14-16,18,19,21,23,25-29,32,38-40,42,44,46,48-50,52,56,58-65,67,71,73-80,82 and 88-91.

DETAILED ACTION

1. This office action is responsive to the communication filed on 7/26/10. Accordingly, claims 6,7,9-13,20,22,24,30,31,33-37,41,43,45,47,51,53-55,57,66,68-70,72,81,83-87, and 92-104 have been canceled and claims 1-5,8,14-16,18,19,21,23,25-29,32,38-40,42,44,46,48-50,52,56,58-65,67,71,73-80,82 and 88-91 are currently pending.

Response to Arguments

1. Applicant's arguments with respect to claims 1, 25, 49, 64 and 79 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 25 – 29, 32, 38 – 40, 42, 44, 46, 48, 64, 65, 67, 71, 73 - 78 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The broadest reasonable interpretation of a claim drawn to a computer readable medium (also called machine readable medium and other such variations) typically covers forms of non-transitory tangible media and transitory propagating signals *per se* in view of the ordinary and customary meaning of computer readable media, particularly when the specification is silent

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or can be broadly interpreted as covering both non-transitory and transitory medium. See MPEP 2111.01.

When the broadest reasonable interpretation of a claim covers a signal *per se*, the claim must be rejected under 35 U.S.C. § 101 as covering non-statutory subject matter. See *In re Nuijten*, 500 F.3d 1346, 1356-57 (Fed. Cir. 2007) (transitory embodiments are not directed to statutory subject matter) and *Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 USC § 101*, Aug. 24, 2009; p. 2.

A claim drawn to such a computer readable medium that covers both transitory and non-transitory embodiments may be **amended** to narrow the claim to cover only statutory embodiments to avoid a rejection under 35 USC § 101 by adding the limitation "**non-transitory**" to the claim. Cf *Animals - Patentability*, 1077 Off. Gaz. Pat. Office 24 (April 21, 1987)(suggesting that applicants add the limitation "non-human" to a claim covering a multicellular organism to avoid a rejection under 35 USC § 101).

Therefore, claims 25-29, 32, 38-40, 42, 44, 46 48, 64, 65, 67, 71 and 73 - 78, line 1, "computer-readable" should be replaced with "non-transitory computer-readable".

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to

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be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 3-5, 8, 14, 18, 19, 21, 23, 25, 27-29, 32, 38, 42, 44, 46, 48-50, 56, 58, 59, 61-65, 71, 73, 74, 77-80, and 88-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gross (US 6,850,541) in view of Luo et al. (US 7,035,461) and Kuhn (US 5,982,916).

Regarding claims 1, 25 and 79, Gross teaches a method, comprising: generating histogram data using packet pairs received from a data source via a network (Fig. 4; col. 2, lines 56-62), the histogram data including bandwidth samples derived from the received packet pairs (col. 3, lines 10-13), the histogram data being associated with a plurality of bins of a histogram (Fig. 5; col. 3, lines 9-13); spatially filtering the histogram data (col. 3, lines 53-59; further described in col. 4, lines 31-40); and estimating bandwidth available on the network using the spatially filtered histogram data (col. 3, lines 53-59; further

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described in col. 4, lines 57-65). Claim 25 further describes a computer-readable medium having computer-executable instructions to perform the above operations (col. 5, lines 21-25).

Although Gross teaches averaging samples, Gross fails to explicitly disclose averaging samples in each bin of the plurality of bins to form a bin average for each bin; and forming a smoothed bin average for a bin in the plurality of bins having a highest smoothed bin count by calculating, for the bin in the plurality of bins having the highest smoothed bin count, a weighted average of a bin average of that bin and of bin average(s) of adjacent bin(s), the bin averages utilizing normalized scaling factors.

However, Kuhn teaches averaging samples in each bin of the plurality of bins to form a bin average for each bin (col. 6, lines 28-30; counts in bins are smoothed/averaged); and forming a smoothed bin average for a bin in the plurality of bins having a highest smoothed bin count by calculating, for the bin in the plurality of bins having the highest smoothed bin count, a weighted average of a bin average of that bin and of bin average(s) of adjacent bin(s), the bin averages utilizing normalized scaling factors (col. 6, lines 41-52, 59-67; smoothing twice).

In view of this, it would have been obvious to one skilled in the art at the time the invention was made to modify Gross's method by incorporating the teachings of Kuhn, for the purpose of obtaining an accurate result.

Gross fails to explicitly disclose forming smoothed bin counts for the plurality of bins by calculating, for each bin, a weighted average of a bin count of

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that bin and of bin count(s) of adjacent bin(s), the bin counts being weighted utilizing normalized scaling factors.

However, Luo teaches forming smoothed bin counts for the plurality of bins by calculating, for each bin, a weighted average of a bin count of that bin and of bin count(s) of adjacent bin(s), the bin counts being weighted utilizing normalized scaling factors (col. 6, lines 14-17).

In view of this, it would have been obvious to one skilled in the art at the time the invention was made to modify Gross and Kuhn's system, by incorporating the teachings of Luo, for the purpose of obtaining an accurate result.

Regarding claims 3 and 27, Gross teaches the method of claim 1, wherein generating histogram data comprises: receiving a packet pair transmitted by the data source via the network (col. 2, lines 56-62); deriving a bandwidth sample from dispersion in the received packet pair (col. 3, lines 10-13, 34-39); and classifying the sample into a bin of the plurality of bins (col. 3, lines 9-30).

Regarding claims 4 and 28, Gross teaches the method of claim 1, wherein the plurality of bins are of uniform bin width (see Fig. 5).

Regarding claims 5, 29 and 80, Gross teaches the method of claim 1, wherein the plurality of bins are organized into a hierarchical structure (see Fig. 5).

Regarding claims 8 and 32, Gross teaches the method of claim 1, wherein spatially filtering histogram data comprises providing compensation for a bin

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having different number of bins used in the spatial filtering on one side than its other side (col. 4, lines 31-40).

Regarding claims 14 and 38, Gross teaches the method of claim 1, wherein a kernel density estimation algorithm is used to determine the normalized scaling factors (col. 3, lines 53-61).

Regarding claims 18 and 42, Gross teaches the method of claim 1, further comprising selectively spatially filtering lower level bins of the bin having the highest smoothed bin count (col. 4, lines 48-65).

Regarding claim 19, Gross teaches the method of claim 1, wherein estimating bandwidth available on the network comprises selecting the smoothed bin average of the bin of the plurality of bins having the highest smoothed bin count (col. 4, lines 66 to col. 5, line 6).

Regarding claim 21, Gross teaches the method of claim 19, wherein estimating bandwidth available on the network further comprises temporally filtering the selected smoothed bin average (col. 4, lines 31-47).

Regarding claim 23, Gross teaches the method of claim 21, wherein temporally filtering the selected smoothed bin average comprises calculating a weighted average of the selected smoothed bin average and a previous estimation of the bandwidth available on the network (col. 4, lines 31-56).

Regarding claim 44, Gross teaches the method of claim 1, wherein estimating bandwidth available on the network comprises selecting a smoothed bin average

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of the bin of the plurality of bins having the largest smoothed bin count (col. 4, lines 66 to col. 5, line 6).

Regarding claim 46, Gross teaches the method of claim 20, wherein estimating bandwidth available on the network further comprises temporally filtering the selected smoothed bin average (col. 4, lines 31-47).

Regarding claim 48, Gross teaches the method of claim 22, wherein temporally filtering the selected bin average comprises calculating a weighted average of the selected smoothed bin average and a previous estimation of the bandwidth available on the network (col. 4, lines 31-56).

Regarding claims 49 and 64, Gross teaches a system (Fig. 4), comprising: a network interface (at personal computer 110) to receive data from a data source coupled to a network (col. 2, lines 56 to col. 3, lines 8); and a bandwidth estimator to estimate available bandwidth on the network (kernel level packet classifier 475; col. 3, lines 53-59), the bandwidth estimator including: a histogram generator to generate histogram data derived from packet pairs the sent by the data source and received via the network interface (col. 3, lines 1-10, 53-59), the histogram data including bandwidth samples contained in one or more bins of a plurality of bins (col. 3, lines 3-10); and a spatial filter to filter histogram data from the histogram generator (col. 3, lines 53-59; further described in col. 4, lines 57-65). Claim 64 further teaches a computer-readable medium having the above components (col. 5, lines 21-25).

Although Gross teaches averaging samples, Gross fails to explicitly disclose averaging samples in each bin of the plurality of bins to form a bin average for each bin; and forming a smoothed bin average for a bin in the plurality of bins having a highest smoothed bin count by calculating, for the bin in the plurality of bins having the highest smoothed bin count, a weighted average of a bin average of that bin and of bin average(s) of adjacent bin(s), the bin averages utilizing normalized scaling factors.

However, Kuhn teaches averaging samples in each bin of the plurality of bins to form a bin average for each bin (col. 6, lines 28-30; counts in bins are smoothed/averaged); and forming a smoothed bin average for a bin in the plurality of bins having a highest smoothed bin count by calculating, for the bin in the plurality of bins having the highest smoothed bin count, a weighted average of a bin average of that bin and of bin average(s) of adjacent bin(s), the bin averages utilizing normalized scaling factors (col. 6, lines 41-52, 59-67; smoothing twice).

In view of this, it would have been obvious to one skilled in the art at the time the invention was made to modify Gross's method by incorporating the teachings of Kuhn, for the purpose of obtaining an accurate result.

Gross fails to explicitly disclose forming smoothed bin counts for the plurality of bins by calculating, for each bin, a weighted average of a bin count of that bin and of bin count(s) of adjacent bin(s), the bin counts being weighted utilizing normalized scaling factors.

However, Luo teaches forming smoothed bin counts for the plurality of bins by calculating, for each bin, a weighted average of a bin count of that bin and of bin count(s) of adjacent bin(s), the bin counts being weighted utilizing normalized scaling factors (col. 6, lines 14-17).

In view of this, it would have been obvious to one skilled in the art at the time the invention was made to modify Gross and Kuhn's system, by incorporating the teachings of Luo, for the purpose of obtaining an accurate result.

Regarding claims 50 and 65, Gross teaches the system of claim 49, wherein the histogram data has a hierarchical structure (see Fig. 5).

Regarding claims 56 and 71, Gross teaches the system of claim 49, wherein the bandwidth estimator estimates the available bandwidth on the network as a function of the smoothed bin count and the smoothed bin average of the bin having the highest smoothed bin count (col. 4, lines 66 to col. 5, line 6).

Regarding claims 58, 73 and 88, Gross teaches the system of claim 49, wherein the spatial filter is further to calculate the smoothed bin average using a compensation factor when the bin having the highest smoothed bin count has only one adjacent bin, (col. 4, lines 31-47; 57-65).

Regarding claims 59, 74 and 89, Gross teaches the system of claim 49, wherein the weights used in the weighted average are determined using a kernel density algorithm (col. 3, lines 53-61).

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Regarding claims 62, 77 and 90, Gross teaches the system of claim 59, wherein the bandwidth estimator further comprises a temporal filter (col. 4, lines 31-47).

Regarding claims 63, 78 and 91, Gross teaches the system of claim 62, wherein the temporal filter is to calculate a weighted average of a selected smoothed bin average and a previous estimation of the bandwidth available on the network, (col. 4, lines 31-47).

4. Claims 2, 26, 52, 67 and 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gross, Luo and as applied to claims 1 and 25 above, and further in view of Loguinov et al. (US 2002/0169880 A1).

Regarding claims 2 and 26, Gross teaches the method of claim 1, wherein the packet pairs are interspersed in a data stream (col. 2, lines 56-65).

Gross fails to explicitly teach a real-time data stream.

However, Loguinov teaches packet pairs interspersed in a data stream (page 2, paragraph 21).

Therefore, it would have been obvious to one skilled in the art to include a real-time data stream, as taught by Logion, in order to transmit data packets at the time in which they occur. 52.

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Regarding claims 52, 67 and 82, Gross teaches the system of claim 49, but fails to explicitly teach wherein the packet pairs conform to a Real-time Transport Control Protocol (RTCP) and are interspersed in a data stream conforming to a Real-time Transport Protocol (RTP).

However, Loguinov teaches RTCP and RTP (page 2, paragraph 21).

Thus, it would have been obvious to one skilled in the art to include RTCP and RTP, for the purpose of transmitting data packets occurring to a real-time protocol.

5. Claims 15, 16, 39, 40, 60, 75 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gross, Luo and as applied to claims 14 and 38 above, and further in view of Burchfiel (US 2004/0092281 A1).

Regarding claims 15, 39, 60 and 75, Gross teaches the method of claim 14, including a kernel density estimation algorithm.

Gross fails to explicitly disclose the kernel density estimation algorithm using a linear kernel.

However, Burchfiel teaches the kernel density estimation algorithm using a linear kernel (Fig. 7, page 9, paragraph 114).

Thus, it would have been obvious to one skilled in the art to include a linear kernel, for the purpose of representing the data in a linear fashion.

Regarding claims 16, 40, 61 and 76, Gross teaches the method of claim 14, including a kernel density estimation algorithm.

Gross fails to explicitly disclose the kernel density estimation algorithm including a Gaussian kernel algorithm.

However, Burchfiel teaches the kernel density estimation algorithm including a Gaussian kernel algorithm (page 8, paragraph 98 and 100).

Thus, it would have been obvious to one skilled in the art to include a Gaussian kernel algorithm, for the purpose of representing data using rise and fall times.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RHONDA MURPHY whose telephone number is (571)272-3185. The examiner can normally be reached on Monday - Friday 9:00 - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through

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